

Claims

What is claimed is:

1. (Previously Presented) A method for non-invasive excitation of specific brain neurons, comprising:

projecting a combination of electromagnetic radiation and ultrasound pulses on to a specific area of a brain that is known to impact or result in precise emotional and/or mental difficulties;

wherein the ultrasound pulses are initiated from a cap configured to conform to a human head;

wherein the electromagnetic radiation is initiated from a plurality of coils connected to the cap; and

wherein the combination of electromagnetic radiation and ultrasound induce cell or neuron depolarization for the purpose of enhancement, habilitation, rehabilitation, and/or redirection of said abnormal mental difficulties.

2. (Previously Presented) An apparatus for inducing neuron depolarization, comprising:

a cap instrument configured to be placed in physical proximity to a human head, the cap instrument comprising:

a plurality of coils arranged in rows on the cap configured to emit electromagnetic radiation when energized with electric current; and

a plurality of hydraulically adjustable prongs connected to the cap for adjusting the distance of the coils from the head for focusing the electromagnetic radiation into the head when the cap is worn by the head.

3. (Previously Presented) A method for stimulating multiple specific areas of a brain with electromagnetic radiation by a plurality of induction coils arranged statically around the brain comprising guiding the electromagnetic radiation via a tube formed beam of ultrasound operated as a guiding system sent into and through a skull casing directly upon the soft mucus tissue of the cerebral cortex of the brain aimed at specific neuron clusters relevant to a particular mental disorder being treated.

4. (Previously Presented) A method of causing neuron depolarization for ameliorating the effects of a mental disorder, comprising:

selecting an area of a brain to stimulate with electromagnetic radiation;

irradiating the selected area from electromagnetic radiation produced by a plurality of coils, wherein:

the electromagnetic radiation is emitted in pulses in a frequency with a lower range of 20 Hz;

the electromagnetic radiation is powered by a battery having a voltage rating from between 9 and 12 volts;

the coils vary in size and shape;

the coils are selectively activated, each producing an electromagnetic field for producing an combined electromagnetic radiation field at the selected area of the brain that targets the selected area.

5. (Previously Presented) An apparatus for inducing neuron depolarization, comprising:

a cap instrument configured to be placed in physical proximity to a human head, the cap instrument comprising:

a plurality of coils arranged in rows on the cap configured to emit
electromagnetic radiation when energized with electric current; and
wherein the coils comprise:

- a double eight shape coil;
- a quadruple eight coil;
- a dumbbell coil;
- a triple circle bar coil;
- a double squared triangle coil;
- a pentagon shaped coil;

wherein the coils are configured to be individually energized for producing
different electromagnetic fields depending on which combination of coils are energized.

6. – 7. (Canceled)

8. (Previously Presented) A method of determining operating parameters of an apparatus
for causing neuron depolarization for ameliorating the effects of a mental disorder, the
apparatus comprising:

a cap instrument configured to be placed in physical proximity to a human head,
the cap instrument comprising:

a plurality of coils arranged in rows on the cap configured to emit a rate of
pulses of a electromagnetic radiation when energized with electric current,
wherein the pulses have a pulse frequency; and

an adjustment mechanism connected to the cap for adjusting the distance
of the coils from the head for focusing the electromagnetic radiation into the
head when the cap is worn by the head;

wherein the coils are directly connected to control modules for

independently controlling each coil;

wherein the method comprises:

varying the coil configuration;

varying power to the coils;

varying conductor position above and over the head;

varying the pulse rate from one pulse every 0.10 to 0.50 seconds to 3 pulses every 0.10 to 0.50 seconds;

varying the pulse frequency from 1Hz to 10Hz;

directing the electromagnetic radiation through a volume of an ultrasound guidance tube onto a target in a brain; and

observing a patient receiving the radiation.

9. – 11. (Canceled)

12. (Previously Presented) A cap instrument configured to be placed in physical proximity to a human head, for causing neuron depolarization for ameliorating the effects of a mental disorder, the apparatus comprising:

the cap instrument comprising:

a plurality of coils arranged in rows on the cap configured to emit a rate of pulses of a electromagnetic radiation when energized with electric current, wherein the pulses have a pulse frequency; and

an adjustment mechanism connected to the cap for adjusting the distance of the coils from the head for focusing the electromagnetic radiation into the head when the cap is worn by the head;

an ultrasound attachment for generating ultrasonically induced electric fields within a brain; and

wherein instrument is configured to emit pulses with a pulse frequency above 50 Hz.

13. – 15. (Canceled)

16. (Currently Amended) A method for stimulating a specific area of a brain using an induction device, comprising:

recording the spatial structure of the brain;

generating a live (present time) model of the brain and specific regions via schematic screen combinations of topography, ~~such as MRI, CT, PET, and X-ray~~;

projecting a combination of electromagnetic radiation and ultrasound pulses on to a specific area of the brain that is known to impact or result in emotional or mental disorders;

wherein the ultrasound pulses are initiated from a cap configured to conform to a human head;

wherein the electromagnetic radiation is initiated from a plurality of coils connected to the cap; and

wherein the combination of electromagnetic radiation and ultrasound induce cell or neuron depolarization for ameliorating mental disorders.

17. – 18. (Canceled)

19. (Previously Presented) The method of claim 1, further comprising configuring the shapes of the coils to target a region of the brain.

20. (Previously Presented) A method for non-invasive excitation of specific brain

neurons, comprising:

preconditioning an area of the brain by targeting an ultrasound beam on to the area;

projecting electromagnetic radiation pulses onto the area of the brain that is known to impact or result in emotional or mental disorders, wherein the radiation is emitted in a sequence of pulses, wherein the duration of each pulse in the sequence is less than 10 milliseconds and wherein the pulses in the sequence alternate in polarity; and

post treating the area of the brain with an ultrasound beam;

wherein the combination of electromagnetic radiation and ultrasound induce cell or neuron depolarization for ameliorating mental disorders.

21. (Previously Presented) An induction coil for generating electromagnetic radiation for causing neuron depolarization in a brain, comprising a coil in the form of a double-eight.

22. (Cancelled)

23. (Currently Amended) An apparatus for causing neuron depolarization for ameliorating the effects of a mental disorder, the apparatus comprising:

[[A]]a cap instrument configured to be placed in physical proximity to a human head, for comprising:

a plurality of coils arranged in rows on the cap configured to emit a sequence of pulses of a electromagnetic radiation when energized with electric current, wherein the pulses have a pulse frequency; and

an adjustment mechanism connected to the cap for adjusting the distance of the coils from the head for focusing the electromagnetic radiation into the head when the cap is worn by the head;

an ultrasound attachment for generating ultrasonically induced electric fields within a brain; and

wherein the pulse sequences comprise of a series of waves greater than 1000 amps in electrical current and less than 10,000 amps and the pulse sequences are in the range of 5-50 seconds in duration, wherein the combination results in having each wave between less than 1 millisecond in duration to 1 tenth of 1 millisecond in duration and the magnetic field produced thereby is at least 1 to 3 Tesla.

24. (Previously Presented) The apparatus of claim 2, wherein the coils are magnetic induction coils and comprise a superconductive coil cooled below its critical temperature and is configured to operate from a 9V battery.

25. (Currently Amended) An apparatus for causing neuron depolarization for ameliorating the effects of a mental disorder, the apparatus comprising:

[[A]]a cap instrument configured to be placed in physical proximity to a human head, for comprising:

a plurality of coils arranged in rows on the cap configured to emit a sequence of pulses of a electromagnetic radiation when energized with electric current, wherein the pulses have a pulse frequency; and

an adjustment mechanism connected to the cap for adjusting the distance of the coils from the head for focusing the electromagnetic radiation into the head when the cap is worn by the head;

an ultrasound attachment for generating ultrasonically induced electric fields within a brain; and

wherein the pulses range from 5 seconds to 50 seconds in duration, and have a frequency that ranges from 10Hz to 100Hz.

26. (Currently Amended) An apparatus for causing neuron depolarization for ameliorating the effects of a mental disorder, the apparatus comprising:

[[A]]a cap instrument configured to be placed in physical proximity to a human head, for comprising:

a plurality of coils arranged in rows on the cap configured to emit a sequence of pulses of a electromagnetic radiation when energized with electric current, wherein the pulses have a pulse frequency; and

an adjustment mechanism connected to the cap for adjusting the distance of the coils from the head for focusing the electromagnetic radiation into the head when the cap is worn by the head;

three congruent thyristor connections configured to consecutively or simultaneously operate to open and close power gap allotments;

an ultrasound attachment for generating ultrasonically induced electric fields within a brain;

wherein the pulses range from 50 microseconds to 400 microseconds in duration;

27. (Previously Presented) The apparatus of claim 2, wherein the coils comprise magnetic cores hemispherical in shape;

wherein the cores comprise magnetic material having a magnetic saturation of between 0.5 Tesla to 5 Tesla; and

wherein windings of wire are wrapped around at least a portion of the magnetic cores.

28. (Cancelled)

29. (Currently Amended) A method for treatment of depression, attention deficit disorder, anxiety, obsessive compulsive disorder, dysthymia, memory loss, learning disorder as well as emotional, and cognitive instabilities by directing a combination of electromagnetic radiation and ultrasound onto a specific area in the brain.

30. (Previously Presented) The apparatus of claim 2, further comprising:

a power source for powering the apparatus; and

a modality shifter, configured for shifting the power source from a 10,000V source to either a 9V source or a 12 V source, for switching between a low power electromagnetic radiation state and high power electromagnetic radiation state.

31. – 33. (Cancelled)

34. (Previously Presented) The apparatus of claim 2, further comprising a switch for connecting the apparatus to a medical imaging scanner for targeting an area of the brain for treatment.

35. (Previously Presented) A method for non-invasive excitation of brain neurons of a person having a mental or emotional disorder, comprising:

projecting a combination of electromagnetic radiation and ultrasound pulses on to specific areas of a brain that known to impact or result in mental or emotional disorders;

wherein the ultrasound pulses are initiated from a cap configured to conform to a human head;

wherein the electromagnetic radiation is initiated from a plurality of coils connected to the cap, the electromagnetic radiation varying in time and intensity from the plurality of coils and focused on a plurality of locations in the cerebrum;

wherein the combination of electromagnetic radiation and ultrasound induce neuron depolarization for the purpose of rehabilitating the , and/or redirection of the mental or emotional disorder.

36. - 37. (Cancelled)

38. (Previously Presented) An apparatus for inducing neuron depolarization, comprising:

a cap instrument configured to be placed in physical proximity to a human head, the cap instrument comprising:

a plurality of coils arranged in rows on the cap configured to emit electromagnetic radiation when energized with electric current, the coils encased in a plurality of plates disposed on top of the cap instrument; and

a plurality of hydraulically adjustable prongs connected to the cap for adjusting the distance of the coils from the head for focusing the electromagnetic radiation into the head when the cap is worn by the head.

39. (Previously Presented) A method of treating a mental illness, comprising:

applying an ultrasound beam to an affected area of the brain through a pathway;

applying electromagnetic pulses through the pathway targeting the affected area of the brain, the electromagnetic pulses initiated from a cap structure surrounding the brain and positioned a fixed distance from the brain;

wherein the method causes neuron depolarization at the affected area.